



# Chicago Metropolitan Agency for Planning

233 South Wacker Drive  
Suite 800, Sears Tower  
Chicago, IL 60606

312-454-0400 (voice)  
312-454-0411 (fax)  
[www.cmap.illinois.gov](http://www.cmap.illinois.gov)

## MEMORANDUM

**To:** CMAP Environment and Natural Resources Committee  
**Date:** October 27, 2008  
**From:** Jesse Elam, Senior Planner  
**Re:** Conservation Values in *GO TO 2040* Plan Development

---

---

This memo is meant to briefly detail CMAP staff's approach to natural resource conservation in the *GO TO 2040* regional comprehensive plan ("Plan"). Our goal is develop a plan that the conservation community supports. Please review this memo and direct environmental questions and comments to Jesse Elam (312.386.8688) and comments about the plan development process more generally to Bob Dean (312.386.8834).

### Scenario Planning

The chief method being used to develop *GO TO 2040* is scenario planning.<sup>1</sup> We are preparing four alternative futures for the region to be compared against one another by stakeholders. After stakeholder input in spring and summer 2009, a preferred scenario will be constructed that blends the best elements of each. The means by which the scenarios are to be compared is a set of 10 – 15 indicators, some of which will measure environmental performance. The modeling that CMAP staff and partners are performing provides the connection between scenario components and the indicators. We are taking an approach as rigorous as possible to describe the costs and benefits of each scenario. The first scenario is a reflection of current trends called the reference scenario, while the other three address natural resource protection as follows:

- Scenario 2: From a conservation perspective, this scenario seeks to preserve and restore functioning ecosystems. It includes major purchases of land for environmental preservation, and restoration of ecosystems in the most viable areas. It also includes constraining the alignments of transportation facilities to avoid impacts on environmentally sensitive land.
- Scenario 3: This scenario seeks to maximize the accessibility of open space and environmental amenities to residents, particularly existing developed areas. It targets open space acquisition and restoration efforts to urban sites and also increases the accessibility of existing parks and open space. Additionally, this course of action targets water and energy conservation to older developments through retrofitting.
- Scenario 4: This scenario seeks to minimize the impact of new development, while accepting that new development will occur by 2040. It includes increased use of conservation design, development restrictions in environmentally-sensitive corridors and cutting-edge stormwater BMPs and wastewater land application techniques. It also relies on alternative energy sources.

---

<sup>1</sup> More information on the non-environmental elements of the scenarios can be found at <http://www.cmap.illinois.gov/uploadedFiles/committees/planning/Agendas/Attachments/PlanningCmteMemo--Scenarios09-10-08.pdf>. The approach to environment and natural resources is described in more detail at [http://www.cmap.illinois.gov/uploadedFiles/committees/environment/agenda/attachments/ENR\\_090308\\_scenario\\_memo.pdf](http://www.cmap.illinois.gov/uploadedFiles/committees/environment/agenda/attachments/ENR_090308_scenario_memo.pdf).

## Relationship to the Green Infrastructure Vision

The Green Infrastructure Vision (GIV) will be the conservation basis of the Plan, and we remain committed to working with Chicago Wilderness to ensure that it is fully incorporated into the Plan. At present, CMAP staff is proposing to incorporate the GIV into the scenarios in three main ways:

1. Publicly-funded land acquisition in the region, a hallmark of **scenario 2**, would occur *only* within the GIV boundaries and at a much higher intensity than in the reference scenario. This will help fill in the GIV with new preserves and improve connectivity. The acreage of “acquirable” land within the GIV is much greater than the acreage of current preserves. This means the Plan needs to prioritize certain areas for acquisition. We propose to do this based on the natural resource value of candidate areas using the method devised by Chicago Wilderness and NIPC.<sup>2</sup> Ecosystem restoration will also be factored into management costs. The GIV also recommended increased agricultural preservation, which we intend to include either in **scenario 2** or **3**.
2. Recommendations for conservation design and impervious surface limitations in new development within the GIV boundaries would be incorporated in **scenario 4** through the extensive use of conservation development principles and development restrictions in sensitive corridors. These sensitive corridors are the GIV boundaries.
3. The *Sustainable Development Principles for Protecting Nature in the Chicago Wilderness Region*,<sup>3</sup> an outgrowth of the GIV, are also included in the scenarios. For instance, one hallmark of **scenario 3** is infill and compact development. Additional open space would also be provided in already urbanized areas (“greenfill” or “urban greening”) in **scenario 3**. Site design recommendations and conservation development are implemented extensively in **scenario 4**. Open space will be protected for ecological purposes as part of new development in the conservation design subdivisions of **scenario 4**. The rest of the principles will be reiterated in the text of the Plan, but it is not feasible to model them.

Note that parts of the GIV are being incorporated each scenario rather than having only one scenario contain all of the GIV recommendations. This is meant to avoid having one scenario labeled as the “environment scenario,” as this could lead to having interest groups pitted against one another in unproductive ways.

## Climate change

CMAP commissioned the Volpe Center, a research unit of the US Department of Transportation, to analyze how to address climate change in the *GO TO 2040* plan.<sup>4</sup> Volpe recommended that CMAP make climate change mitigation a policy goal and that the CMAP Board adopt greenhouse gas (GHG) emission reduction targets that the Plan would try to accomplish. CMAP staff will make a recommendation to the CMAP Board on GHG targets as soon as staff have completed the supporting technical analysis, which will first be vetted through the CMAP committees.

Volpe also recommended estimating GHG emissions resulting from each scenario and using that as an indicator for comparing scenarios. GHG reduction would be approached as a “co-benefit,” i.e., that no strategy would be pursued solely for the purpose of climate change mitigation but as something that

---

<sup>2</sup> Northeastern Illinois Planning Commission. n.d. *Natural Resource and Socio-Economic Impacts of 2030 Regional Transportation Proposals*. This document is available upon request.

<sup>3</sup> <http://www.chicagowilderness.org/pubprod/miscpdf/DESIGNPRINCIPLES1.pdf>

<sup>4</sup> See [http://www.cmap.illinois.gov/uploadedFiles/committees/environment/agenda/attachments/Volpe\\_for\\_ENR\\_ctte\\_092608.pdf](http://www.cmap.illinois.gov/uploadedFiles/committees/environment/agenda/attachments/Volpe_for_ENR_ctte_092608.pdf)

could have a number of advantages, including GHG reduction. Examples of such strategies include increasing investment in transit, promoting infill development, and managed lanes. Staff agrees with both recommendations and will do so. Volpe also recommended conducting a regional inventory of GHG emissions, which we are now starting in collaboration with the Center for Neighborhood Technology.

At this point we are confident that we are addressing climate change more robustly than almost any other regional planning agency in the country. We are largely concentrating on mitigation strategies because, unlike in coastal areas, it does not appear that we face major impacts in this region *that the Plan can address* beyond merely describing what is expected to occur. In some cases, however, there may be co-benefits with adaptation as well, such as our effort to implement the GIV, and CMAP is committed to providing technical assistance to help local governments in the region in adaptation efforts. We are willing to change our position on adaptation if stakeholders suggest feasible strategies that can be incorporated into the Plan.

### Strategies

The scenarios are composed of individual strategies – in other words, actions or investments that the region could undertake. These include everything from congestion management to economic development improvements, and CMAP's research into these topics is written up in a series of papers available at <http://www.goto2040.org/>. We are conducting this research because our agency mission is to integrate land use and transportation planning in the region: we need to understand the connections between things we are proposing. A number of the papers describe topics of interest to the conservation community: conservation design, agricultural preservation, and parks and open lands. Forthcoming papers include ecosystem restoration, waterway management, wastewater planning, and stormwater best management practices. We are still seeking comments and corrections on these papers and encourage stakeholders to offer feedback.

### Indicators

CMAP and the Chicago Community Trust are engaged in a project to develop approximately 150 indicators to track regional progress over time in achieving our Regional Vision.<sup>5</sup> Extensive input was sought from the CMAP Environment and Natural Resources committee to develop these indicators. A smaller number of indicators will be used to compare the performance of scenarios against one another. CMAP staff is now working to characterize the causal relationship between different strategies and the indicators — in other words, if the region does X, then how do the indicators change? The working list of environmental indicators for scenario evaluation is described below:

1. *Imperviousness*. One of the ways we will evaluate the scenarios is to compare the resulting amount of imperviousness by watershed, probably focusing on watersheds draining to higher quality streams. (We suspect it will be better if imperviousness increases in the watersheds of lower quality streams – through infill development -- than if it increases in the watersheds of higher quality streams.) Impervious cover has been projected for the reference scenario. Merely looking at imperviousness will not capture the benefits of improved stormwater best management practices (BMPs), however, so staff is examining methods of projecting stormwater volume and quantity and the effects of more advanced BMP approaches.

---

<sup>5</sup> More information on the Regional Indicators Project is at <http://www.goto2040.org/indicators.aspx>. The Regional Vision can be found at <http://www.goto2040.org/vision.aspx>.

2. *Water use.* Because of the excellent research done by Southern Illinois University as part of the regional water supply planning effort,<sup>6</sup> we will be able project water use in each scenario relative to the reference case. Water use can be considered a function of the number of households and jobs as well as the conservation measures in place. These conservation measures, adopted by the Regional Water Supply Planning Group, will be part of our scenarios.
3. *Greenhouse gas emissions.* As noted above, the Center for Neighborhood Technology is under contract to CMAP to produce a regional GHG emissions inventory, a refinement of the work CNT did for the City of Chicago's *Chicago Climate Action Plan*. This project will also produce GHG emission estimates for a select number of municipalities in the metro region. As mentioned, GHG emissions will be calculated for each scenario, and CNT will also be assisting with this.
4. *Open space connectivity.* In addition to increasing the total acreage of preserves and the size of individual preserves, a primary goal of the GIV is to increase connectivity between natural areas. We propose to measure connectivity in each scenario based on certain metrics developed by landscape ecologists.<sup>7</sup> Preliminary work has already been undertaken to do so, and it seems likely that either the "Patch Cohesion Index" or "Adjacency Index" are best suited to the task. Because staff has not been able to find a satisfactory biodiversity indicator, we would like to request assistance from CW to establish one.
5. *Air quality.* Besides GHG emissions, CMAP will be projecting emissions of the air pollutants for which the Chicago region is not meeting standards as part of the federally mandated conformity process.
6. *Energy use.* CMAP has also contracted with CNT for research on an Energy Snapshot similar to CMAP's Sustainability, Infill, and forthcoming Jobs-Housing Balance Snapshots.<sup>8</sup> The information generated for the Snapshot will be used to project energy use by scenario.
7. *Land consumption.* A fundamental indicator is the total amount of land developed by 2040 for each scenario. This indicator is sensitive to a variety of strategies, from infill development to open space acquisition.

## Water Supply

The *Regional Water Supply Plan* that CMAP is developing in partnership with the Illinois Department of Natural Resources and the State Water and Geological Surveys is a major effort in its own right. This three-year project has resulted in demand projections for the region and an assessment of the likely impacts on groundwater and surface water of increased water use. The water supply plan's recommendations will play directly into *GO TO 2040*. For more information on the water supply plan, contact Tim Loftus at 312.386.8666.

## Collaboration

We want to encourage the Chicago Wilderness Consortium to continue its involvement with, and constructive review of, our plan development process. We also seek opportunities to share our work and seek feedback through Chicago Wilderness forums. Our goal, again, is to develop a regional comprehensive plan that the conservation community supports and that guides land development and major investments in the region to 2040 and beyond.

---

<sup>6</sup> See <http://www.cmap.illinois.gov/watersupply/default.aspx>

<sup>7</sup> These are summarized usefully in the documentation for the U.S. Forest Service and University of Massachusetts program FRAGSTATS at [http://www.umass.edu/landeco/research/fragstats/documents/fragstats\\_documents.html](http://www.umass.edu/landeco/research/fragstats/documents/fragstats_documents.html).

<sup>8</sup> See <http://www.cmap.illinois.gov/snapshot.aspx>